

MBS Response to Western Environmental Law Center Correspondence

The following response addresses correspondence of September 20, 2012 from the Western Environmental Law Center, regarding spotted owl information and the Suiattle River Road Project (WA FSERFO 071-2023). The letter to the Forest Service, the Western Federal Lands Highway Division, and the U.S Fish and Wildlife Service (FWS) requested that based on new information (2011 noise study), the action and consulting agencies should conduct supplemental environmental analysis regarding the effects of the repair, operation, and maintenance of the Suiattle River Road on the northern spotted owls.

U.S. Forest Service staff continues to update the information database used in making effects determination for federally listed species in Section 7 Endangered Species consultation. In determining spotted owl effects, new information such as the 2011 noise study (*Impacts of acute and long-term vehicle exposure on physiology and reproductive success of the northern spotted owl* [L. Hayward, et al. 2011]) is being considered along with previous papers. The 2011 study is a continuation of studies (Wasser et al., 1997)¹ that examine effects on species' fecal thyroid hormone metabolites and glucocorticoids as a measure of stress from disturbance activities.

The 2011 study suggests that disturbance from traffic can have a significant impact on fitness of the Northern spotted owl (NSO), but this determination is not fully developed in the study paper.

The 2011 experiment used street legal motorcycles equipped for long-distance cross-country competition ("Enduro" races) to examine effects of off-highway vehicle use on the NSO. Motorcycles (with up to 96 decibels [dB]²) simulated acute noise exposure by being ridden back and forth for one hour along an approximate half mile stretch of road close to the owls' roost or nest sites. Motorcycles are frequently listed as having a noise level at 90 to 92 decibels (dB) while passenger vehicle traffic on a rural road is listed in the range of the 45 to 50 dB³. A highway department noise level chart explaining the difference in decibel detection levels classifies a change of 3 dB or less as not noticeable to the human ear, while a change of 5 dB is noticeable, and a change in 10 dB would be twice as noticeable (perceived as "twice as loud"). So there is a considerable difference between an hour of motorcycle noise (90 dB) and background road noise (45 to 50 dB) expected on a rural forest road. Given the dB level of motorcycles, it is not surprising that the study found an acute raised level of fecal glucocorticoids (fCGs), (the hormones most often measured in disturbance studies) in "Enduro" treated birds, but there is not a clear association demonstrated of elevated fCG levels with routine forest road traffic. In fact, Hayward and others (2011) concluded that the road proximity to nest sites and the noise level of road was not correlated with the baseline fCG levels of owls on those nests.

Another question with the 2011 study is the lack of description of routine road traffic noise levels. Both control and treatment sites in the 2011 study were located in areas described as ranging from **high** to **low** routine off-highway vehicle use, but there is not a description of **routine** road traffic in forest settings. The 2011 study reported that overall, spotted owls have an increased fCG response to **acute** traffic exposure, and state that this finding is consistent with the Wasser et al. (1997) study of elevated hormone levels found in male NSO with territories close to roads in Washington. The traffic in the Wasser 1997 study entailed major logging roads, with

¹ Wasser, S.K., K.R. Bevis, G. King, and E. Hanson. 1997. Noninvasive physiological measures of disturbance in the northern spotted owl. *Conservation Biology* 11(4):1019-1022.

² See http://www.trailandenduro.com.au/useful_stuff/noise.html

³ See WSDOT document at <http://www.wsdot.wa.gov/Environment/Biology/BA/default.htm#Noise>

the study examining differences in fCG from spotted owl within and beyond 0.41 km (0.25 mile) of major logging roads. The 1997 study report did not include a description of level of activity or noise level on the logging roads. Without additional description of the decibel levels of the logging road scenario of the Wasser et.al 1997 study and the control roads in the 2011 study, it is difficult to ascertain how the acute noise attributed to those roads compares with the forest road situation of Road 26.

The distinction between loud and quiet roads was thought to be influential in determining potential impacts on spotted owl reproduction success and fitness. The 2011 study reported that NSO within 100 meters of quiet roads fledged more young than NSO further from roads⁴, while NSO within 100 meters of loud roads fledged fewer young. The study recorded very few actual failed nesting attempts, and appears to include single owls and non-reproducing owl pairs with failed nest attempts. Additional review of the raw data and how single and non-reproducing owls were accounted for in the study may show no significant difference in failed nesting attempts adjacent to noisy roads. The 2011 study also noted that the measure of the relationship between fCGs and fitness is not always significant or consistent, and that effects on survival and reproductive success are rarely quantified. An example was given of a study by Creel et al. (2002), which reported an association between exposures to snowmobiles and elevated fecal glucocorticoid metabolites (fCGs) in wolves and elk, but the study found no evidence of an effect of traffic on population dynamics.

In the case of the 2011 study, Mount-Baker Snoqualmie (MBS) National Forest staff have taken a hard look at the information and at the environmental effects of the planned action. The new information would not alter the spotted owl effects determination previously consulted on with the FWS for the Road 26 repairs. The repairs were assessed as having a “may effect, likely to adversely affect spotted owls,” due to the noise disturbance from the proposed road repair activities.⁵ This effect determination is consistent with studies of acute noise disturbance described in the 2002 Forest Programmatic Biological Assessment and Biological Opinion.⁶

Noise disturbance on Road 26 following repairs would include road maintenance, which is covered in the cumulative effects determinations found in Chapter 3 of the August 2012 Suiattle River Road Project, Amended Environmental Assessment (AEA). The referenced road maintenance in the AEA is under Section 7 consultation in separate consultations with the Forest Programmatic Biological Assessment / Biological Opinion. Noise disturbance from the resumption of traffic on Road 26 is a concern previously raised by Pilchuck Audubon Society (PAS) that neither the amended environmental assessment nor the consultation documents for the Suiattle Road Project addressed the operation, maintenance, and resumption of traffic on Road 26. These comments are provided and further addressed below.

PAS Comment: *There is absolutely no mention on the referenced pages of the effects that resuming and ongoing auto traffic would have on wildlife, air and water quality, noise pollution,*

⁴ The 2011 study in N. Ca. suggested that owls near roads eat better, with more prey (such as wood rats) near roads

⁵ See the Suiattle River Road Project, AEA (2012), Chapter 3 pages 130 to 134 for spotted owl effects determination; and Chapter 4 of the AEA for the consultation history of the Suiattle Road 26 Project.

⁶ Staff members of the MBS are currently engaged in updating the Mt. Baker-Snoqualmie (MBS) Nation Forest’s Programmatic Biological Assessments (BA) for forest management activities with the effects determination of those activities on federally listed species. The updated programmatic BA is not yet finalized, but new information in the updates is utilized in current project assessments and excerpts on noise disturbance to marbled murrelets and spotted owl. New information is provided in the Addendum, attached to this paper

endangered fish populations, etc.

Agency Response: While the environmental consequences of construction activities and resulting impacts are discussed for all resources in Chapter 3 - Environmental Consequences, specific description of resumption of ongoing traffic was targeted to species or resources that would be influenced by the resumption of traffic. See the AEA, pages 138 to 139, for grizzly bear effects, pages 140 to 141 for wolverine effects, and Wildlife Forest Plan consistency on pages 142 to 143 (includes cumulative effects) for wildlife effects. Effects on air quality from resuming traffic are described in the AEA on pages 153 to 154, and water quality effects are described in the AEA on page 106. Fisheries effects from resuming traffic listed potential poaching scenarios in the AEA on pages 74 to 79. The USFS consultation used both stand-alone formal and programmatic Biological Assessments with corresponding Biological Opinions.

PAS Comment: *The noise of ongoing traffic is not considered in the EA. The example given of a marbled murrelet nest near US 101 is not an equivalent situation, since this busy highway represents ongoing, relatively constant traffic, which is not the same as intermittent automobile noise.*

Agency Response: Disturbance effects relative to background levels of disturbance (such as ongoing traffic) are a part of the effects assessment in the Forest Programmatic Biological Assessment. The information in this assessment is utilized in project consistency forms and stand-alone, formal Biological Assessments which were part of the Section 7 Consultation for the Suiattle Road 26 project.

The Forest Programmatic Biological Assessment (2002) considers: (1) The type of data available concerning disturbance of murrelets, (2) the best available information concerning disturbances to murrelets due to researchers, vehicles, loud noises, aircraft and pedestrians near the nest not due to research, (3) disturbances of birds in other water-oriented taxonomic orders, (4) rationale behind setting of detectability, alert, disturbance for various activities covered in the Biological Opinion for the Forest, (5) the likelihood of injury due to these activities, and (6) the best-available information concerning disturbance of birds other than murrelets (MBS Programmatic BA, 2002; pp. 62-63; 75-76).

The Forest Programmatic BA describes murrelet (and spotted owl) harassment most likely to occur under three situations: (1) noise is so loud that it interrupts and/or precludes essential behavior, (2) a noise and/or visual stimulus is in such close proximity to the nest that the activity is perceived as a threat and causes flushing from the nest or missed feedings, and (3) noise is loud and sudden, has rapid onset, thereby causing startled –flush response. Background forest road traffic (typically levels around 45 to 50 dB (cumulative sound exposure level [SEL] or lower) is considered within background ambient noise levels for Forest Service Level 3-5 roads and does not lead to murrelet or owl harassment as described above.

The USFS has reviewed the information in the 2011 Hayward et al. study, the Suiattle Road 26 AEA, and the Section 7 consultation record for the Suiattle River Road Project. The AEA and consultation record support the spotted owl effects determination for the repair, operation and maintenance of Road 26. At this time, it is unlikely that additional supplemental environmental analysis would produce a determination of different effects. Therefore, a supplemental analysis of the Suiattle River Road Project for effects to spotted owl is not warranted.

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10/20/12

Addendum:
Excerpts from Updates to the Mt. Baker-Snoqualmie Programmatic BA on Noise Effects (2009)

As related to murrelets, the attempt to quantify adverse effects by estimating various injury thresholds as some number of dBA above ambient and background levels would necessitate estimating both the ambient/background levels and project-specific sound levels at every location for every project. This would be cost-prohibitive and is not warranted at this time. The USFWS estimates these sound-only levels to be: 40 dBA for ambient; 44 dBA for the detection threshold (sight or sound is detectable to a murrelet but there is no apparent response); 57 dBA for the alert threshold (interest is shown in the sight or sound); 70 dBA for the disturbance threshold (avoidance of sight or sound, no injury); 82 dBA for the non-aircraft injury threshold (injury (harassment) by the sight or sound); and 92 dBA for the aircraft injury threshold. Information from surveys and research on marbled murrelets and their reaction to typical occurrences and activities that are both seen and heard, is used as an initial attempt to make injury-distance thresholds for murrelets.

It may be possible that owls may not react visibly to a disturbance, but are producing increased levels of corticosterone in reaction to the disturbance. Corticosterone is released by the hypothalmo-pituitary-adrenal gland to help animals respond to environmental stress. It is hypothesized that chronic high levels may have negative consequences on reproduction or physical condition (Marra and Holberton 1998). Wasser et al. (1997) measured corticosterone levels in feces of northern spotted owls within and beyond 0.41 km (0.25 mi.) of heavily used logging roads and/or forest management activities, and between areas of clearcut and selective harvests. The study found statistically significant elevated corticosterone levels in owls within 0.41 km of forest management activity, and in proximity to clearcuts for male owls only; no differences were noted for females. Sample sizes were admittedly small. Hayward et al. (2011) examined effects of off-highway vehicle use (motorcycles fitted for cross country competition) on northern spotted owls, and reported acute vehicle exposure (<96 decibels) generally increased fecal glucocorticoid metabolites (fCGs) in the short term. Whether such elevated levels of corticosterone actually result in adverse effects to owls is undetermined.

The MBS has chosen to be conservative in past consultations, in that it has applied the assumption that these typical Forest activities could cause harassment. There is no data to indicate that activities described in the Project Descriptions section have actually caused harassment of spotted owls or marbled murrelets. Further, hundreds of scientific observers engaged in protocol survey can attest to the owls' apparent, and typical, lack of apprehension during close encounters with humans and their vehicles. However, due to a lack of statistically sound observations of these phenomena and an assumption that spotted owls may suffer from increased, detrimental increases in corticosterone levels without flushing from the nest or perches, it is assumed that some harassment by these activities can occur. If murrelet physiology and behavior is similar to gulls, spotted owls, and mockingbirds, then it is possible that adult murrelets and late-stage nestlings could produce elevated levels of corticosterone in response to disturbances. However, whether such elevated levels of corticosterone would result in adverse effects on murrelets is unknown.

Wasser, S. K., K. Bevis, G. King and E. Hanson. 1997. *Noninvasive physiological measures of disturbance in the Northern Spotted Owl*. Conservation Biology 11:1019-2022.

Marra P. P. and R. L. Holberton. 1998. *Corticosterone levels as indicators of habitat quality: effects of habitat segregation in a migratory bird during the non-breeding season*. Oecologia 116:284 ± 292.

Hayward, L. S., A. Bowles, J. C. Ha, and S. K. Wasser. 2011. *Impacts of acute and long-term vehicle exposure on physiology and reproductive success of the northern spotted owl*. Ecosphere 2(6):art65. doi:10.1890/ES10-00199.1